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Volkerink, Bjørn; Haan, Jacob de

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# Fragmented Government Effects on Fiscal Policy: New Evidence\*

Bjørn Volkerink      Jakob de Haan<sup>†</sup>

Faculty of Economics

University of Groningen

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## Abstract

Most industrialized countries entered the 1980s with their public finances in disarray. At the time, persistent deficits pushed up public debt-to-GDP ratios. Despite such similarities, deficit spending varies substantially between countries and within countries over time. Recent theoretical and empirical research has considered how differences in political arrangements affecting national policy formation might explain variation in fiscal policies pursued. Using a panel of 22 OECD countries over the 1971-1996 period this paper extends previous literature on the effects of fragmented government on fiscal policy outcomes in various directions. First, we focus on data relating to central government instead of general government as all theories refer to central government. Second, not only do we analyze the effect of size fragmentation of government, we also examine government's position vis-à-vis parliament and government's political fragmentation. We find evidence that more fragmented government (defined in terms of the number of political parties in a coalition or the number of spending ministers) have higher deficits. There is also some evidence that governments that dispose of excess seats in parliament have lower deficits. Right-wing governments appear to have been fiscally more responsible in the seventies. Political fragmentation does not affect government's budget deficit.

Keywords: fragmented government, fiscal policy, political economy.

JEL-code: H62, D78.

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<sup>†</sup>Both authors are at: Faculty of Economics, University of Groningen, P.O. Box 800, NL-9700 AV Groningen, The Netherlands. Voice: + 31 50 363 3724, fax +31 50 363 7337, email: [B.Volkerink@eco.rug.nl](mailto:B.Volkerink@eco.rug.nl), homepage: <http://www.eco.rug.nl/medewerk/bjorn/>

# 1 Introduction

Most industrialized countries entered the 1980s with their public finances in disarray. At the time, persistent deficits pushed up public debt-to-GDP ratios. Despite such similarities, deficit spending varies substantially between countries and within countries over time. Recent theoretical and empirical research has considered how differences in political arrangements affecting national policy formation might explain variation in fiscal policies pursued. In this research the assumption of an infinite horizon, benevolent government, which is standard in many macroeconomic analyses, is dropped.

One line of empirical research focuses on so-called fragmented government. This research started with Roubini & Sachs (1989a,b) who used a variable to identify the type of government in power to explain the growth of government debt in OECD countries. They found that broad coalition governments experienced higher deficits, other things being equal, than did one-party, majoritarian governments. Similar results were reported by Corsetti & Roubini (1992). However, subsequent research found less support for the Roubini-Sachs view.<sup>1</sup>

Recently, Kontopoulos and Perotti have broadened this approach by arguing that the previous literature overlooked what they call size fragmentation (see Kontopoulos & Perotti (1999) and Perotti & Kontopoulos (1999)). One possible source of fragmentation of fiscal policy-making is the number of decision makers. The larger the number of decision makers the less each will internalize the costs that a certain policy will impose on others. It can be argued that the relevant group here is each political party in government. The rationale is that for the purpose of fiscal policy-making a party is more or less a cohesive entity, representing the interests of specific groups. An alternative interpretation would be that each spending minister in the government is the basic unit, as each participates in the formulation of the overall budget and makes demands on it.

Using a dataset for 19 OECD countries over the period 1970-95, Perotti & Kontopoulos (1999) conclude that the number of spending ministers and, to a lesser extent, also the number of political parties in a coalition affect fiscal policy outcomes. Ideology also matters for spending, notably so for transfers, but does not affect deficits. The authors also conclude

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<sup>1</sup>Edin & Ohlsson (1991) argue, for instance, that the political cohesion variable used by Roubini and Sachs captures the effects of minority governments rather than majority coalition governments. De Haan & Sturm (1994) and De Haan & Sturm (1997) found support for neither the Roubini-Sachs hypothesis nor the position expressed by Edin-Ohlsson. Borelli & Royed (1995), Hahm, Kamlet, & Mowery (1996), Kontopoulos & Perotti (1999), De Haan, Sturm, & Beekhuis (1999) and Perotti & Kontopoulos (1999) also dismiss the Roubini-Sachs hypothesis. Recently Ashworth & Heyndels (2000) have found some evidence that weak (fragmented) governments respond slower to external shocks to the tax structure.

that the importance of size fragmentation increases in difficult times (i.e. periods with high unemployment and/or high debt ratios). Also De Haan, Sturm, & Beekhuis (1999) and Franzese (1998) report (weak) evidence that the number of parties in a coalition matters for fiscal policy outcomes.

This paper extends the literature in a number of ways. One serious shortcoming of most previous empirical work in this line of research is that the data used refer to general government, whereas the theoretical notions that underly the estimates clearly refer to central government. In many countries fiscal variables of central and local governments diverge substantially. In this paper we use data for central government. Furthermore, we extend previous research in three other directions. First, we examine other aspects of fragmentation, including political fragmentation as the ideological coherence of a cabinet may matter for fiscal policy outcomes as well (see also Franzese (1998)). Second, we examine government's position vis-à-vis parliament as this may also affect fiscal policy outcomes. Finally, we offer a careful sensitivity analysis to check for the robustness of our findings.

The remainder of the paper is organised as follows. The next section discusses the model and data employed. Section 3 presents the outcomes of the basic model, while Section 4 contains sensitivity analyses. The final section offers some concluding comments.

## 2 The model and data

We use a variant of the model of Roubini and Sachs (1989a,b) that has also been employed by various subsequent studies. It is consistent both with elements of optimizing approaches to budget deficits (such as the tax smoothing model of Barro (1979)) and with traditional Keynesian models of fiscal deficits. Indeed, both theories imply that budget deficits are countercyclical. Suppressing time indices the estimated equation is:

$$\text{DEF} = a_0 + a_1\text{DEFL} + a_2\text{GROWTH} + a_3\text{DRB} + a_4\text{POL} + v \quad (1)$$

where the dependent variable (DEF) denotes the budget deficit-to-GDP ratio of central government. The explanatory variables are: the lagged deficit (DEFL)<sup>2</sup>, the real GDP growth rate (GROWTH), the change in actual debt-servicing costs (DRB), and the various political-institutional variables (POL) defined below;  $v$  denotes the error term.<sup>3</sup> Country dummies are

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<sup>2</sup>Kontopoulos & Perotti (1999) employ the change of the deficit as dependent variable, thereby imposing the restriction that  $a_1 = 1$ . In our model without political variables this restriction had to be rejected ( $t = 10.1$ ). It also turned out that our outcomes were quite different for this specification.

<sup>3</sup>We have also experimented with other explanatory variables as suggested in the literature. Perotti & Kontopoulos (1999) include, for instance, also the inflation rate. It turned out that this variable was generally

included in all regressions.

The fiscal data for central government are from various issues of the IMF's *Government Finance Statistics* (GFS). Our sample comprises of 22 OECD countries (all except Luxembourg) and starts for most countries between 1971 and 1973, which is the earliest observation in the GFS, and generally ends in 1995 or 1996.<sup>4</sup> As the GFS also provide information on total outlays (OUTL) and total incomes (INC), our dataset allows us to examine whether the effect of any political variable on the deficit exerts its influence through the revenue and/or the expenditure side of the budget. As there are sometimes data breaks, we have constructed a dummy variable for all observations for which GFS indicated a break. This dummy is included as an additional explanatory variable.

We focus on four groups of political variables. First, we examine the impact of size fragmentation of government. Second, we analyse the position of government vis-à-vis parliament. Third, we examine the impact of the ideological complexion of government. Finally, we focus on the political fragmentation of government, i.e. the degree to which political parties in the coalition have different ideologies. The most important source for our political data is Woldendorp, Keman, & Budge (1993) and the update thereof (Woldendorp, Keman, & Budge (1998)). For some countries and variables other sources have been used (see the data appendix for further details).

As pointed out in the Introduction, the concept of *size fragmentation* can be interpreted in two ways. First, it can refer to the number of political parties in government. As the number of parties does not take the size of the various parties into account, we have employed the effective number of parties (ENPG) in the coalition. This variable is defined as:

$$\text{ENPG} = \frac{1}{\sum_{i=1}^n p_i^2} \quad (2)$$

where  $p_i$  denotes the share of ministers from party  $i$  as a proportion to the total number of ministers and  $n$  is the number of coalition parties. This concept is the inverse of the Herfindahl-index (see, e.g., Martin (1993, p. 165), and has already been applied in political economy studies (see, for instance, Taagepera & Shugart (1989)).

Second, size fragmentation may refer to the number of spending ministers (NSM). This variable is defined somewhat differently from Perotti & Kontopoulos (1999). Their definition is insignificant. Furthermore, the rate of inflation is already implicitly taken into account by including real interest payments into the model. We have also employed the (change in the) unemployment rate as additional variable. Once the growth rate of GDP is included this variable was often insignificant. This is caused by the high degree of correlation between the rate of growth of real GDP and the change in the unemployment rate (-0.5).

<sup>4</sup>The data set used can be downloaded at <http://www.eco.rug.nl/medewerk/bjorn/papers.html>, the most recent version of the paper can also be found there.

of spending ministers is not entirely satisfactory as it also includes head(s) of the ministry(ies) of finance. In the literature on budgetary procedures these ministries are generally considered to be not spending departments but instead those taking the public interest into account.<sup>5</sup> It is widely believed that the minister of finance, like the prime minister, has a somewhat different position than other ministers. Our measure NSM is therefore simply the total number of ministers in government as reported by Woldendorp, Keman, & Budge (1993) minus the ministers of finance and/or the budget and the prime minister.

Now let's turn to *government's position vis-à-vis parliament*. The influence of one coalition party will be stronger, if the support of the party concerned is needed to gather enough support in parliament. Or, in other words, if the coalition controls substantially more seats in parliament than needed for a simple majority, the power of any partner in the coalition – be it a party or a single MP – will be weaker. To capture this notion we have calculated the excess number of seats (ES), i.e. the number of seats above those needed for a simple majority, scaled to the number of seats that make up this simple majority.

A somewhat different perspective is provided by our variable ENPP, that measures the effective number of parties in parliament. The intuition behind this measure is that the strength of government vis-à-vis parliament depends on the number of parties in parliament. The more parties government faces, the more difficult it will be for the opposition to form a united front against government. Another line of reasoning is, however, also possible. After all, if a government consists of many parties it is likely that this is a reflection of the situation in parliament.

From this perspective, the ideological fragmentation of parliament may also be relevant. The more politically divided parliament is, the less government may have to fear from the opposition. Therefore, we have also calculated the political fragmentation (in line with Franzese (1998)) of parliament (PFRAP) as follows:

$$\text{PFRAP} = \sum_i^n \left( \left( \frac{\text{Seats}_i}{\text{Total}} \right) \times (\text{Complexion}_i - \text{ICP})^2 \right) \quad (3)$$

where ICP denotes the ideological complexion of parliament, which is defined as:

$$\text{ICP} = \sum_i^n \left( \frac{\text{Seats}_i}{\text{Total}} \times \text{Complexion}_i \right) \quad (4)$$

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<sup>5</sup>Alesina & Perotti (1999, p. 23) state, for instance, that: “The constituencies of spending ministers are groups and industries who benefit from certain spending programs, while, at least in theory, the constituency of the Treasury minister is the “average” taxpayer. Thus the spending ministers do not internalize the aggregate costs of certain spending programs, while the Treasury has an incentive to internalize.”

ICP is constructed as follows. Using various sources, all  $n$  political parties in parliament are positioned on a one (left-wing) to ten (right-wing) scale. ICP is then constructed using the total number of seats of party  $i$  as weighting factors. Thus, (4) can be interpreted as the average complexion of parliament, whereas (3) can be interpreted as its variance.

Finally, we have included some indicators for *political fragmentation* of government. Following Franzese (1998) we employ two variables. The first one (PFRAG) simply measures the ideological fragmentation in a coalition by:

$$\text{PFRAG} = \sum_i^n \left( \left( \frac{\text{Seats}_i}{\text{Total}} \right) \times (\text{Complexion}_i - \text{ICG})^2 \right) \quad (5)$$

where ICG measures the ideological complexion of government, based on the relative number of ministers from a certain political party that is represented in government, i.e.:

$$\text{ICG} = \sum_i^n \left( \frac{\text{Seats}_i}{\text{Total}} \times \text{Complexion}_i \right) \quad (6)$$

The second measure is inspired by Tsebelis's (1995) argument that each member of a coalition may be a potential veto-actor. Large ideological differences will in that case make compromising more difficult. To capture this effect, we calculate the maximum distance between party codes (MDPC) in a coalition.<sup>6</sup>

As far as the impact of the *political complexion* of government is concerned, some authors have argued that as left-wing parties would like to spend more they are also likely to have higher deficits. However, there is not much empirical support for this view. For instance, for the European Union countries, De Haan & Sturm (1994) conclude that the ideology of government does not affect budget deficits. The indicator used (CPG: complexion of government) comes from Woldendorp, Keman, & Budge (1993), and ranges from 1 (right-wing) to 5 (left-wing).

Table 1 summarizes our political variables. The Appendix provides a detailed description of all political data used and their sources.

### 3 Results for the basic model

Estimation is by weighted least squares (WLS), correcting for the unbalanced data set. We have first tested whether country-dummies should be included. Indeed, the restriction that

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<sup>6</sup>Although the latter two concepts are rather alike, there is a fine distinction between the two. If MDPC has a significant impact on deficit spending, the main impact of fragmentation of government is exerted through plain conflict of interest within government, whereas a significant effect on deficit spending of PFRAG takes into account the weight of the parties in determining the size of the conflict.

Table 1: Political Variables

Variable:	Description:	Exp. impact on deficit:	Average:	St. dev.:	Max:	Min:
ENPG	effective number of parties in government	positive	1.78	0.98	5.24	1
NSM	number of spending ministries	positive	15.37	4.70	33	5
ES	excess seats of coalition in parliament	negative	0.06	0.11	0.39	-0.39
ENPP	effective number of parties in parliament	?	3.44	1.39	8.27	1.69
PFRAP	political fragmentation of parliament	negative	2.89	1.25	6.87	0.62
PFRAG	political fragmentation of government	positive	0.55	0.79	3.54	0
MDPC	max. ideological difference in government	positive	1.16	1.33	4.86	0
CPG	ideology of government	?	2.45	1.55	5	1

	Partial correlation coefficients							
	ENPG	NSM	ES	ENPP	PFRAP	PFRAG	MDPC	CPG
ENPG	1	-0.30	0.49	0.82	0.02	0.70	0.85	-0.20
NSM		1	-0.21	-0.28	0.20	-0.39	-0.34	-0.03
ES			1	0.17	-0.16	0.46	0.49	-0.16
ENPP				1	0.16	0.54	0.64	0
PFRAP					1	-0.12	-0.03	-0.02
PFRAG						1	0.87	-0.07
MDPC							1	-0.15
CPG								1

the country dummies were equal could be rejected. In the tables below we only report the outcomes for the central government budget deficit (DEF) and expenditure (OUTL) as the difference between outlays and revenues equals the budget deficit. This requires that we employ the same model for the budget deficit, expenditures and revenues.

First, we turn to the models for size fragmentation (Table 2). It follows that the effective number of parties affect the budget deficit of central government (column 1).<sup>7</sup> This is due to the fact that the impact of ENPG on outlays (column 2) is stronger than that on revenues.

<sup>7</sup>Unless otherwise stated, significant indicates significance at a 5% level.



Also the number of spending ministers affects the budget outcome (column 3). Again the impact of NSM on the expenditure side is stronger than its effect on the revenue side (column 4). The fifth and sixth columns show the results when both ENPG and NSM are included. Now ENPG is not significant in the regression for the government deficit, but both variables are significant in the regression for expenditures. The final columns present the results if we interact our indicators with economic growth; the coefficients of both ENPG and NSM become significantly different from zero again in the regression for central government's deficit, albeit that this holds true only at the 10 percent level for ENPG (column 7). These results are broadly in line with the findings of Kontopoulos & Perotti (1999), who – in contrast to the present paper – employed data referring to general government.

Table 3 reports the outcomes of the models for the effect of government's position vis-à-vis parliament. All variables that we have constructed have the expected sign, but they are not all significantly different from zero. We start with the number of excess seats that government disposes of in parliament (ES). As follows from column 1, a comfortable position in terms of parliamentary support makes it easier for government to keep its finances in order. Interestingly, the effect of this variable is not significant in either the expenditure regression (column 2) nor the revenue regression. The effective number of parties in parliament (ENPP) also affects the budget deficit (column 3). The more fragmented parliament is, the higher central government's budget deficit.<sup>8</sup> This effect is caused by a stronger impact on the expenditure side (column 4) than on the revenue side. The relevance of distinguishing between various sides of the budget is further illustrated by the political fragmentation of parliament (PFRAP) that does not affect the budget deficit (column 5), because its impact on revenues and expenditure (column 6) balance out. If the three variables under this heading are included simultaneously, only ENPP remains significant in the regression for the budget deficit (column 7). If the variables are interacted with economic growth, ES becomes significant again (column 9).

Table 4 shows the results for political fragmentation and the ideology of government. We start with the political fragmentation of government (PFRAG). It is quite interesting that the coefficient of this variable is neither significantly different from zero in the regression for government's budget deficit (column 1) nor government expenditure (column 2). These findings contrast with those of Franzese (1998). Our other indicator for ideological differences within government (MDPC) yields similar findings. The regressions with the interaction

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<sup>8</sup>As shown in 1, ENPP and ENPG are highly correlated, supporting the positive impact of ENPP.

Table 2: The impact of size fragmentation on fiscal policy, full sample

	(1) DEF	(2) OUTL	(3) DEF	(4) OUTL	(5) DEF	(6) OUTL	(7) DEF	(8) OUTL
DEFL	0.686 (22.11)	1.066 (12.29)	0.680 (22.06)	0.979 (14.58)	0.678 (21.97)	0.965 (14.58)	0.664 (21.63)	0.893 (14.83)
GROWTH	-0.188 (-4.85)	-0.100 (-0.92)	-0.205 (-5.25)	-0.320 (-3.77)	-0.206 (-5.27)	-0.328 (-3.92)	0.272 (1.94)	2.326 (8.47)
DRB	1.223 (6.76)	0.332 (0.66)	1.228 (6.86)	0.370 (0.95)	1.220 (6.80)	0.293 (0.76)	1.236 (6.97)	0.369 (1.06)
ENPG	0.004 (2.12)	0.041 (8.75)			0.002 (0.90)	0.015 (3.97)	0.003 (1.68)	0.022 (5.92)
NSM			0.0008 (3.50)	0.011 (20.67)	0.0008 (2.91)	0.010 (18.02)	0.008 (2.86)	0.010 (19.46)
ENPG*GROWTH							-0.104 (-2.73)	-0.502 (-6.74)
NSM*GROWTH							-0.020 (-2.74)	-0.122 (-8.37)
No. obs.	469	469	469	469	469	469	469	469
$R^2$	0.78	0.72	0.79	0.83	0.79	0.84	0.79	0.87

Note: country dummies and a dummy indicating breaks in the data are included in all regressions.

Table 3: The impact of government's position vis-à-vis parliament on fiscal policy, full sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	DEF	OUTL	DEF	OUTL	DEF	OUTL	DEF	OUTL	DEF	OUTL
DEFL	0.684 (22.03)	1.124 (11.96)	0.676 (21.70)	0.958 (11.93)	0.685 (21.79)	1.033 (11.41)	0.674 (21.49)	0.958 (11.86)	0.674 (21.53)	0.924 (12.30)
GROWTH	-0.179 (-4.63)	-0.014 (-0.12)	-0.195 (-5.02)	-0.170 (-1.70)	-0.183 (-4.72)	-0.054 (-0.48)	-0.192 (-4.95)	-0.176 (-1.76)	0.051 (0.47)	1.937 (7.51)
DRB	1.251 (6.93)	0.594 (1.09)	1.247 (6.94)	0.608 (1.31)	1.235 (6.81)	0.435 (0.83)	1.257 (6.99)	0.567 (1.22)	1.245 (6.98)	0.461 (1.08)
ES	-0.024 (-2.10)	-0.040 (-1.17)					-0.018 (-1.59)	0.047 (1.57)	-0.029 (-2.00)	0.066 (1.93)
ENPP			0.004 (2.99)	0.045 (13.22)			0.004 (2.57)	0.044 (11.07)	0.004 (2.63)	0.039 (10.10)
PFRAP					0.001 (1.18)	0.021 (6.64)	-0.0007 (-0.57)	0.004 (1.22)	-0.0007 (-0.45)	0.014 (3.73)
ES*GROWTH									0.455 (1.31)	-0.514 (-0.62)
ENPP*GROWTH									-0.080 (-3.01)	-0.348 (-5.45)
PFRAP*GROWTH									-0.001 (-0.04)	-0.358 (-4.69)
No. obs.	469	469	469	469	469	469	469	469	469	469
$R^2$	0.78	0.68	0.79	0.77	0.78	0.70	0.79	0.77	0.79	0.80

Note: country dummies and a dummy indicating breaks in the data are included in all regressions.

Table 4: The impact of political fragmentation and ideology on fiscal policy, full sample

	(1) DEF	(2) OUTL	(3) DEF	(4) OUTL	(5) DEF	(6) OUTL	(7) DEF	(8) OUTL	(9) DEF	(10) OUTL	(11) DEF	(12) OUTL
DEFL	0.692 (22.29)	1.137 (12.16)	0.692 (22.25)	1.137 (12.13)	0.691 (22.20)	1.135 (12.10)	0.684 (21.92)	1.088 (11.72)	0.711 (21.00)	1.760 (9.88)	0.709 (20.84)	1.636 (9.88)
GROWTH	-0.181 (-4.66)	-0.019 (-0.16)	-0.181 (-4.66)	-0.017 (-0.15)	-0.181 (-4.66)	-0.019 (-0.16)	-0.128 (-2.54)	0.389 (2.59)	-0.198 (-5.06)	0.052 (0.25)	-0.174 (-2.62)	2.127 (6.58)
DRB	1.242 (6.84)	0.567 (1.04)	1.244 (6.83)	0.577 (1.05)	1.244 (6.83)	0.578 (1.05)	1.239 (6.83)	0.579 (1.07)	1.411 (6.19)	-1.423 (-1.19)	1.416 (6.20)	0.636 (1.24)
PFRAG	0.0004 (0.23)	0.0029 (0.53)			0.0007 (0.28)	0.0048 (0.62)	-0.0059 (-1.42)	-0.0053 (-0.42)				
MDPC			0.0000 (0.04)	0.0005 (0.13)	-0.0003 (-0.17)	-0.0017 (-0.35)	0.0043 (1.69)	0.014 (1.80)				
CPG									0.001 (1.42)	0.019 (5.87)	0.001 (1.38)	0.038 (9.93)
PFRAG*GROWTH							0.226 (2.05)	0.377 (1.15)				
MDPC*GROWTH							-0.159 (-2.40)	-0.553 (-2.81)				
CPG*GROWTH											-0.011 (-0.45)	-0.913 (-7.96)
No. obs.	469	469	469	469	469	469	469	469	393	393	393	393
$R^2$	0.78	0.68	0.78	0.68	0.78	0.68	0.78	0.69	0.80	0.19	0.80	0.31

Note: country dummies and a dummy indicating breaks in the data are included in all regressions.

variables show that both interaction terms are significant and MDPC is also significant, albeit at a 10% level. In the regression for expenditures, only MDPC (10%) and its interaction term are significant.

The final columns of Table 4 show the results for the ideology of government (CPG).<sup>9</sup> Our regressions suggest that left-wing governments do not to have higher deficits than right-wing governments. If the variable interacted with growth is added, both are insignificant. Interestingly, in both the regressions for outlays and revenues the coefficient is positive and significant, independently of the inclusion of the interaction term. This indicates that even though left-wing governments spend more, they also tax more, so the balance is not affected.

Finally, we have included all political variables in one regression. The results for the full sample (excluding CPG,  $n = 469$ ,  $t$ -statistics are shown in brackets) are:

$$\begin{aligned}
 \text{DEF} = & \quad 0.66 \quad \text{DEFL} \quad - \quad 0.21 \quad \text{GROWTH} \quad + \quad 1.23 \quad \text{DRB} \quad + \quad 0.004 \quad \text{ENPG} \\
 & (20.98) \quad \quad \quad (-5.31) \quad \quad \quad (6.88) \quad \quad \quad (1.48) \\
 & + \quad 0.001 \quad \text{NSM} \quad - \quad 0.031 \quad \text{ES} \quad + \quad 0.001 \quad \text{ENPP} \quad - \quad 0.000 \quad \text{PFRAP} \\
 & (2.27) \quad \quad \quad (-2.34) \quad \quad \quad (0.31) \quad \quad \quad (-0.37) \\
 & + \quad 0.002 \quad \text{PFRAG} \quad - \quad 0.002 \quad \text{MDPC} \\
 & (0.68) \quad \quad \quad (-0.69) \quad \quad \quad \quad \quad \quad \quad \quad R^2 = 0.79.
 \end{aligned}$$

The results for the smaller sample (including CPG,  $n = 393$ ,  $t$ -statistics are shown in brackets) are:

$$\begin{aligned}
 \text{DEF} = & \quad 0.67 \quad \text{DEFL} \quad - \quad 0.22 \quad \text{GROWTH} \quad + \quad 1.45 \quad \text{DRB} \quad + \quad 0.004 \quad \text{ENPG} \\
 & (19.48) \quad \quad \quad (-5.64) \quad \quad \quad (6.45) \quad \quad \quad (1.21) \\
 & + \quad 0.001 \quad \text{NSM} \quad - \quad 0.028 \quad \text{ES} \quad + \quad 0.001 \quad \text{ENPP} \quad - \quad 0.001 \quad \text{PFRAP} \\
 & (2.61) \quad \quad \quad (-2.03) \quad \quad \quad (0.55) \quad \quad \quad (-0.47) \\
 & + \quad 0.001 \quad \text{PFRAG} \quad - \quad 0.001 \quad \text{MDPC} \quad + \quad 0.000 \quad \text{CPG} \\
 & (0.26) \quad \quad \quad (-0.72) \quad \quad \quad (0.40) \quad \quad \quad \quad \quad \quad \quad \quad R^2 = 0.81.
 \end{aligned}$$

In the regression for the budget deficit, only the number of spending ministers, and the percentage of excess seats in parliament exert a significant effect of the expected sign. The effect of NSM is caused by the stronger effect on expenditures, whereas ES mainly influences revenues (not shown).

## 4 Sensitivity analyses

In this section we report the outcomes of various sensitivity tests. Kontopoulos & Perotti (1999) find that the effect of fragmentation differs across sample periods. Political and institutional variables have very little effect in the 1960s. In the seventies they find that NSM is highly significant in both the deficit and expenditure regressions, while ENPG is not. In the

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<sup>9</sup>Note that the sample is reduced for these estimates since the variable CPG is not available for Greece, Portugal, Spain and the United States.

1980s exactly the opposite is true.<sup>10</sup> Kontopoulos and Perotti argue that this difference is due to the nature of the fiscal shocks in the two decades. Whereas in the seventies the main shock to fiscal policy was external, in the eighties it was internal, and the dividing line was between countries that engaged in discretionary consolidations and those that did not. Table 5 reports the coefficients for the political variables for two subperiods (1971-83 and 1984-96) if we include the various groups of political variables. For the 1970s we find like, Kontopoulos and Perotti, that only NSM is significant in the regression for government's budget deficit. In contrast to their results, we find that during the 1980/90s the coefficients of both NSM and ENPG are significantly different from zero (column 1), albeit only at a 10% level. For the expenditure side of the budget, it appears that NSM is very significant in both subperiods, while ENPG is only significant in the first (column 2). Again, these results differ from those of Kontopoulos and Perotti.

As pointed out before, the main difference in this respect between the studies of Kontopoulos and Perotti and ours is the data used. So, the use of data referring to general government have driven the conclusions of Kontopoulos and Perotti to a certain extent.

Columns (3) and (4) report the results for our variables reflecting government's position vis-à-vis parliament. Again, the results are not very stable across both periods. The results for the 1970s are in line with the results reported in Table 3, albeit that ES is less significant. During the 1980s none of the variables exerts a significant influence on the government's budget deficit. For the expenditure side, the results for the 1980s are broadly in line with those for the full sample period, but during the 1970s only the effective number of parties in parliament matters.

Columns (5) and (6) show the outcomes for ideological differences inside government. Here the results for the subsamples are in line with those for the full sample. Columns (9) and (10) contain the regression results for government's ideology. Interestingly, government ideology seems to have mattered in the seventies. More left-wing governments had higher deficits. This effect has vanished in the eighties.

Columns (7) and (8) (full sample, no CPG) and (11) and (12) (smaller sample, CPG included) show the results if all politico-institutional variables are included. It follows that during the 1970s the main influence on the budget deficit was both the number of spending ministers and the share of excess seats in parliament (only in the smaller sample), whereas none of the variables has had a significant impact on the budget deficit in the 1980s sample.

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<sup>10</sup>As noted before, this conclusion is based on data referring to general government.

Table 5: The impact of political variables in the subsamples

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	DEF	OUTL	DEF	OUTL	DEF	OUTL	DEF	OUTL	DEF	OUTL	DEF	OUTL
1972-83												
ENPG	0.0012 (0.51)	0.029 (5.41)					-0.0002 (-0.05)	0.029 (3.17)			0.0011 (0.26)	0.019 (1.82)
NSM	0.0008 (2.53)	0.008 (11.73)					0.0007 (2.21)	0.007 (11.59)			0.0005 (1.86)	0.009 (13.88)
ES			-0.028 (-1.77)	0.041 (1.01)			-0.0300 (-1.62)	-0.003 (-0.07)			-0.035 (-1.84)	0.025 (0.54)
ENPP			0.005 (2.53)	0.049 (9.12)			0.0032 (1.06)	0.015 (2.55)			0.003 (1.05)	0.010 (1.49)
PFRAP			-0.0006 (-0.37)	-0.002 (-0.51)			0.0005 (0.33)	0.010 (2.92)			0.0003 (0.25)	0.025 (8.30)
PFRAG					-0.002 (-0.46)	-0.001 (-0.11)	-0.0010 (-0.28)	-0.005 (-0.69)			-0.0014 (-0.45)	-0.012 (-1.62)
MDPC					-0.000 (-0.02)	0.001 (0.18)	0.0003 (0.09)	-0.014 (-2.26)			0.0003 (0.12)	-0.009 (-1.33)
CPG									0.003 (3.32)	0.026 (6.27)	0.0015 (1.51)	-0.0002 (-0.10)
1984-96	DEF	OUTL	DEF	OUTL	DEF	OUTL	DEF	OUTL	DEF	OUTL	DEF	OUTL
ENPG	0.006 (-1.78)	0.0000 (0.00)					0.007 (1.47)	0.012 (1.69)			0.003 (0.63)	0.002 (0.23)
NSM	0.0009 (-1.81)	0.015 (18.24)					0.001 (1.54)	0.013 (4.97)			0.0007 (1.50)	0.015 (17.84)
ES			0.009 (0.43)	0.077 (1.74)			-0.021 (-0.86)	-0.043 (-1.25)			-0.019 (-0.76)	0.042 (1.08)
ENPP			0.004 (1.55)	0.039 (6.43)			-0.002 (-0.47)	0.0004 (0.08)			-0.0002 (-0.04)	0.011 (1.80)
PFRAP			0.003 (0.91)	0.032 (5.27)			0.001 (0.40)	0.019 (4.47)			0.0001 (0.03)	0.027 (6.46)
PFRAG					-0.001 (-0.32)	0.012 (0.96)	-0.0001 (-0.02)	0.018 (2.59)			-0.0016 (-0.30)	0.011 (1.31)
MDPC					0.004 (1.09)	-0.011 (-1.08)	0.0003 (0.08)	-0.026 (-4.25)			0.0015 (0.33)	-0.018 (-2.55)
CPG									-0.001 (-1.19)	0.019 (3.10)	-0.0014 (-1.01)	0.002 (0.98)

Note: country dummies and a dummy indicating breaks in the data are included in all regressions.

Next, we have examined the sensitivity of our results for the sample of countries. We have re-estimated all models 22 times, excluding one country every time. It appeared that some of the results are sensitive for the inclusion of a specific country. The coefficient for ES is only significant at a 10% level if Denmark, Finland, Norway, Sweden or the United Kingdom is not included in the sample. If the United States are excluded, the coefficient for the percentage of excess seats in parliament becomes highly insignificant. All these countries have been governed by a minority government at one or more instances.<sup>11</sup> Furthermore, the coefficient for ENPG becomes insignificant if Sweden is excluded from the sample. On the other hand, if either France (10%), New Zealand (10%), or the United States (5%) are excluded from the sample, the coefficient for PFRAP becomes significant. If all variables are included, NSM becomes less significant (10%) if France is excluded, and ES is either not significant (if Sweden is excluded) or less significant (10%) if the United States are excluded.

Finally, we have added a dummy variable to capture the effect of EMU. Our sample comprises many countries that intended to enter EMU and this may have affected their fiscal policies as absence of a so-called excessive deficit was an entry condition for EMU. So for the member states of the European Union the dummy EMU is one starting from year X onwards, while for the other countries and before year X the dummy is zero. We have experimented with various values for X., starting with 1991 (in which the Maastricht Treaty was signed). Only when X was 1996 its coefficient is significant in the regression for the budget deficit, both for the full sample and for the variant in which the countries with an opt-out are considered not to be an EU-country.<sup>12</sup> This only marginally affects the significance of the coefficient for ES (not shown).

## 5 Concluding comments

This paper extends the literature in a number of ways. In this paper we use data for central government since the theoretical notions that underly the estimates clearly refer to central government. Furthermore, we extend previous research in three other directions. First, we examine other aspects of fragmentation, including political fragmentation as the ideological coherence of a cabinet may matter for fiscal policy outcomes as well (see also Franzese (1998)).

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<sup>11</sup>In case of the United Kingdom, after the first elections in 1974, both the Conservatives and Labour did not obtain a majority in the Lower House. Labour formed a government, since they had the highest number of seats. After the second elections that year, Labour did obtain a majority in the Lower House. Since the Wilson minority cabinet governed for 7 months, a minority government is recorded for that year. As far as the United States are concerned, many of the Republican presidents faced a largely Democratic House of Representatives. In these instances, the governments are recorded as being minority governments.

<sup>12</sup>This result is broadly in line with the findings of De Haan & Sturm (2000).



Second, we examine government's position vis-à-vis parliament as this may also affect fiscal policy outcomes. Finally, we offer a careful sensitivity analysis to check for the robustness of our findings.

Our results for the budget deficit indicate that:

- As far as size fragmentation is concerned, the impact of the number of ministers is stronger and more robust than the effective number of parties in government. In the 1970s the impact of the number of parties is negligible.
- As far as the relation to parliament is concerned, the most robust influence is exerted through the effective number of parties in parliament. The percentage of excess seats in parliament mainly plays a role in the seventies, and it's effect is somewhat sensitive to the inclusion of some countries in the sample.
- Political fragmentation does not seem to influence either revenues or expenditures, leaving the deficit unaffected as well. There is some evidence for an impact of maximum distance of political complexion within a coalition.
- We find evidence that during the 1970s right-wing governments tended to be fiscally more responsible than left-wing governments.

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## A Data appendix

Variable:	Description:	Source:
ENPG	effective number of parties in government	own calculations, data from Woldendorp, Keman, & Budge (1993) and updates.
NSM	number of spending ministries	ibid.
ES	excess seats of coalition in parliament	Mackie & Rose (1982) and updates thereof.
ENPP	effective number of parties in parliament	ibid.
ICG	ideology of government	Dodd (1975), Browne, Gleiber, & Mashoba (1984), Castles & Mair (1984), Laver & Budge (1992), Laver & Hunt (1992), Laver & Schofield (1990), and Huber & Inglehart (1995).
CPG	ideology of government	Woldendorp, Keman, & Budge (1993) and updates.
PFRAP	political fragmentation of parliament	ibid.
PFRAG	political fragmentation of government	ibid.
MDPC	max. ideological difference in government	ibid.
DEF	budget deficit consolidated central government (/GDP)	IMF, Government Financial Statistics, various issues.
OUTL	expenditure consolidated central government (/GDP)	ibid.
INC	revenue consolidated central government (/GDP)	ibid.
DRB	interest payment consolidated central government (/GDP)	ibid.
GROWTH	growth rate of real GDP	OECD Economic Outlook (1999).